Department of Defense
Legacy Resource Management Program

PROJECT NUMBER (03-1808)

BEST PRACTICES FOR INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) IMPLEMENTATION

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AUGUST 2005

Report Documentation Page		Form Approved OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE **AUG 2005**	2. REPORT TYPE	3. DATES COVERED **00-00-2005 to 00-00-2005**
4. TITLE AND SUBTITLE **Best Practices for Integrated Natural Resources Management Plan (INRMP) Implementation**		5a. CONTRACT NUMBER
		5b. GRANT NUMBER
		5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)		5d. PROJECT NUMBER
		5e. TASK NUMBER
		5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Horne Engineering Services, Inc,3130 Fairview Park Drive, Suite 400,Falls Church,VA,22042**		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT **Approved for public release; distribution unlimited**

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT **Same as Report (SAR)**	18. NUMBER OF PAGES **48**	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**			

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

BEST PRACTICES FOR INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) IMPLEMENTATION

A Study for the
Office of the Under Secretary of Defense,
Installations and Environment

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Contents

Acronyms

BRAC   Base Realignment and Closure

DoD   Department of Defense

DoDI   Department of Defense Instruction

EPRM   Environmental Program Requirements Module

ESA   Endangered Species Act

FWS   US Fish and Wildlife Service

IAFWA   International Association of Fish and Wildlife Agencies

INRMP   Integrated Natural Resources Management Plan

ITAM   Integrated Training Area Management

MOMs   Measures of Merit

NEPA   National Environmental Policy Act

ODUSD(I&E)   Office of the Deputy Under Secretary of Defense, Installations and Environment

RPTS   Reimbursable Programs Tracking System

SAIA   Sikes Act Improvement Act of 1997

T&E   Threatened and Endangered (species)

Executive Summary

Military lands in the United States are managed according to an ecosystem approach that is outlined in the individual installation Integrated Natural Resources Management Plan (INRMP). There are 368 INRMPs currently being implemented in the United States on more than 29 million acres of military training and testing lands. These lands are a valuable natural resource, and their sustainable management is important not only to the military services but also to the Nation.

The INRMP is a comprehensive document that not only describes an installation's natural resources management but also addresses a range of other issues specific to individual installations: special resources management including rare, threatened, and endangered species; forest management; wildland fire management; hunting and fishing programs; agricultural outleasing; public access; regional initiatives; partnering; education, outreach, and special events; and administrative aspects, including project prioritization, funding, and implementation. The INRMP is intended to be a dynamic document that is reviewed annually, updated as needed, and reapproved every five years. Many INRMPs are due or will be soon due for the first major review, update, and approval.

Since its introduction, the INRMP has gained increasing importance as a key installation document. It is the only installation document that provides a regional setting for an installation, and the INRMP's comprehensive approach makes it a valuable tool to many users from military trainers and installation managers, to state and federal natural resources agencies, and to local and regional planners. There is no comparable document to the military INRMPs, and their widespread application on military lands throughout the United States provides conservation benefits to species, habitats, and ecosystems, many of which are under jeopardy on non-military lands. The passage of the National Defense Authorization Act for fiscal year 2004 further emphasized the importance of the INRMP by allowing the substitution of an INRMP for critical habitat designation under the Endangered Species Act so long as implementation of the INRMP provides a benefit to the particular species.

The DoD and services recognize the value and successes of the INRMP, and there is intent to continue to improve the process. There are several initiatives under way that would improve INRMPs and the overall INRMP process. In 2003, the Office of the Under Secretary of Defense, Installations and Environment, (ODUSD(I&E)) initiated a study to examine the effectiveness of INRMP implementation and to identify best practices from across the services. This report presents the findings of that study.

The overall study approach was one of information- and data-gathering from a series of interviews with staff at nine installations representing the Army, Navy, Marine Corps, and Air Force services. The installation INRMPs were reviewed for each installation, and staff were interviewed from the respective service headquarters offices, state fish and wildlife agencies, and local U.S. Fish and Wildlife (FWS) offices.

To focus the study, the conservation team in the ODUSD(I&E) identified 11 areas of interest relevant to best practices and effective INRMP implementation:

- Supporting the military mission

- Ensuring installation ecosystem health

- Funding

- INRMP project completion

- Meeting compliance requirements

- Monitoring INRMP effectiveness

- Stakeholder input, especially from states

- Meeting Endangered Species Act and FWS requirements

- Protecting species at risk

- INRMP adaptability and flexibility

- Organizational effectiveness.

A series of questions/talking points on the areas of interest was developed to stimulate discussion and to serve as a checklist to ensure that all topics were covered in all interviews. The questions/talking points were pre-tested and also were reviewed by FWS headquarters and regional offices, the International Association of Fish and Wildlife Agencies (IAFWA) (representing the state fish and game agencies), and ODUSD(I&E) conservation staff.

A second component of the study involved reviewing stand-alone INRMP documents for content and readability. A total of 20 INRMPs were reviewed representing the four services and installations across the country.

A third component of the study was updating the web-published *Resources for INRMP Implementation—A Handbook for the DoD Natural Resources Manager*. The handbook was revised to include new DoD and service guidance, and all hyperlinks to reference web sites and web-available documents were checked and updated. The updated version is published on DENIX at www.denix.osd.mil/inrmp.

Overall, the study found that the INRMP is a successful tool and that the INRMP process with its emphasis on ecosystem management, partnering, and coordination is providing benefits directly to military trainers and operators. The INRMP process is also directly playing a key role in management and conservation of the Nation's natural resources. As well as providing sound management for more than 29 million acres of land, the INRMP process is generating extensive information and data on a wide range of natural resources, habitats, and landscapes. Challenges to INRMP implementation remain, with the most significant being funding. Also, due to staffing problems the state and FWS agency offices are often unable to participate in INRMP implementation to their desired or directed levels. Specifically for FWS, much of the agency staff time is spent on meeting their compliance-driven responsibilities to the Endangered Species Act (ESA) and, to a lesser extent, the Clean Water Act. Under the current requirements of the ESA and the agency's funding and staffing constraints, it is not clear how the FWS offices can increase and improve the level of interaction with the military installations.

Installation natural resources managers are employing a range of best practices for INRMP implementation at installations across the country. The science being applied to INRMP implementation is sound, with the natural resources managers using a range of expertise and sources to supplement their own abilities and knowledge. Most natural resources managers are aware of any shortcomings in the current INRMPs, and the managers are keen to improve the INRMPs through the regular INRMP update process.

Compared to just four or five years ago, the natural resources managers have successfully incorporated a regional aspect to managing installation lands. This has been achieved by actively developing regional perspectives and visions for installations and also by engaging local and regional stakeholders and forming new or joining existing partnerships. A common feature of the best practices identified in the study was good communications, both within the installations and with the local state and FWS offices. Some installations still lack regular communications between the natural resource/land managers and the range managers/trainers and operators. In some cases, the military trainers and range managers do not proactively use the support of the natural resources managers, and this can result in a reactive rather than proactive mode of operation. The study also found that positive communications with the external stakeholders almost always lead to installations being involved in initiatives occurring beyond the installation boundary but that could have direct positive or negative impacts on an installation's ability to meet its mission requirements. In these cases, the installations are in a much better position as a partner to comment on and assist in the development of local and regional initiatives that may impact the installations. In the best examples of good communications, all levels of an installation play a role in the communications and coordination—from the natural resources manager to the installation commander.

Best Practices for Integrated Natural Resources Management Plan (INRMP) Implementation

INTRODUCTION

There are currently 368 Integrated Natural Resources Management Plans (INRMPs) being implemented across the United States on about 29 million acres of military training and testing lands. These lands are important not only for supporting the military mission but also are a national resource and are valued by a wide range of groups, including naturalists, foresters, researchers, educators, outdoor recreation users, rod and gun enthusiasts, and many others. The Department of Defense (DoD) has long since recognized the broad-based importance of these lands and for over 10 years has been following an ecosystem approach to land management. The INRMP is the tool by which installations implement ecosystem management. It is a planning document that outlines an installation's specific management actions for sustaining the military training and testing lands, but it also describes an installation's actions for conserving natural resources, protecting threatened and endangered species and their habitats, protecting wetlands and water bodies, coordinating with state and federal natural resource agencies, establishing public access for recreation, and partnering with local and regional groups and organizations.

BACKGROUND

There may be no more useful single document developed for an installation than the INRMP. Since its arrival as a legally required document, the INRMP has continued to play an increasingly important role in installation management. As of November 2001[1], installation INRMPs are required to be implemented and must be maintained through regular updates and formally approved every five years. Many of the first INRMPs will soon be going through the first formal update and reapproval. The DoD and services recognize the value and successes of the INRMP process, and there is an intent to continue to do the best possible management, learn from past experiences, and apply new technologies and methods to implementation. Since implementation of the first INRMPs, there are several important issues that now rely in part on the detailed and up-to-date information found in INRMPs. Natural resources issues that may be considered in INRMPs that will be updated include: substituting an INRMP for critical habitat designation under the Endangered Species Act (ESA); control of invasive species; spread and control of wildlife disease; changes by the services in forest management goals; conservation law enforcement; and wildfire management. Recent and developing land management issues that will also be important in the updates include range sustainability,

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[1] The Sikes Act Improvement Act of 1997 (SAIA) requires that INRMPs be implemented by 1 November 2001, are updated regularly, and should be approved and signed every five years by upper command, the state, and the U.S. Fish and Wildlife Service. The SAIA, Public Law 105–85, Div. B. Title XXIX, Nov. 18, 1997; codified at 16 U.S.C. § 670a et seq. (1998) (amending The Sikes Act of 1960, 16 U.S.C. § 670a et seq. (1996)). Full text can be found at http://thomas.loc.gov/home/thomas2.html or http://www4.law.cornell.edu/uscode/16/670a.html.

encroachment, and preparations for the next round of base realignment and closure (BRAC) in 2005[2]. Because the INRMP is updated regularly, it can address such new and developing issues and is therefore an important resource to planners, decision-makers, and resource agencies.

To support installations as they update and revise INRMPs, the Office of the Deputy Under Secretary of Defense, Installations and Environment, (ODUSD(I&E)) initiated a study to identify best practices that will improve the effectiveness and robustness of INRMPs. Study findings on INRMP implementation are reported for mission support, environmental compliance, funding, project completion, habitat protection, compliance, monitoring for effectiveness, and stakeholder input. This report presents the findings of the ODUSD(I&E) nationwide study. It also identifies best practices and examples of effective INRMP implementation, reveals areas where there is room for improvement, and provides recommendations as appropriate.

In addition to the nationwide best practices review, the study included two supporting components—reviewing and critiquing a selection of stand-alone INRMP documents and updating the web-published *Resources for INRMP Implementation—A Handbook for the DoD Natural Resources Manager* (http://www.denix.osd.mil/inrmp). The written INRMP document may not reflect the practices on the ground; however, a part of the overall study involved reviewing in detail a selection of INRMPs. The objectives were to determine how effective installation INRMP documents are in relating an installation's natural resources management practices and to identify best practices in the published INRMP documents, regardless of practices on the ground. For the many groups and individuals that may interact with an installation or seek information about an installation's natural resources, the written INRMP document is the main and often only source of information. An installation may be judged entirely on the quality of its natural resources management by what is documented in the INRMP. A poorly written and poorly organized INRMP will not produce a favorable view of an installation's management.

DETERMINING BEST PRACTICES

In any exercise to identify best practices or other "best" features, there is an element of subjectivity. Throughout the study, efforts were made to reduce or eliminate subjectivity by using a standardized and consistent approach. Also, in addressing the question of what are the best practices of an effective INRMP, it is recognized that there is not one single set of activities that will result in successful and effective INRMP implementation or be appropriate for all installations. This is because of the variability among installations, between the training and testing missions, and among very diverse local conditions and settings.

The approach used in the study was primarily one of information- and data-gathering from a sample survey using the following sources:

- Reviewing installation INRMPs
- Interviewing installation personnel
- Reviewing service guidance

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[2] In 2002, Congress authorized another round of base realignment and closures (BRAC) for 2005 by amending the Defense Base Realignment and Closure Act of 1990 through the fiscal year 2002 Defense Authorization Act. Information available at: http://www.defenselink.mil/brac.

- Interviewing staff from service headquarters, major command, or other service organizations

- Interviewing representatives of key stakeholder groups such as the International Association of Fish and Wildlife Agencies (IAFWA) (representing the state fish and game agencies), and the U.S. Fish and Wildlife Service (FWS).

The majority of the information was gathered by personal, face-to-face interviews that followed a questionnaire/talking points list.

To focus the study, ODUSD(I&E) identified areas of interest relevant to best practices and effective INRMP implementation[3]. These areas of interest were the basis of study interviews and document reviews:

- Supporting the military mission

- Ensuring installation ecosystem health

- Funding

- INRMP project completion

- Meeting compliance requirements

- Monitoring INRMP effectiveness

- Receiving and using stakeholder input, especially from the FWS and the state fish and wildlife agencies

- Meeting ESA requirements

- Protecting species at risk

- INRMP adaptability and flexibility

- Organizational effectiveness.

The approach used in the design and administration of the questionnaire/talking points and in the interviews followed general survey techniques (such as those referenced in *The Survey System*[4] and *Using Structured Interview Techniques*[5]). The technique used in the study may be classed as an unstructured interview combined with a questionnaire. In comparison to more formalized survey methods such as structured interviews, questionnaires, and telephone interviews, this personal interview approach allows more complex and open-ended questions that can then lead to more in-depth discussions. Also, the length of the questionnaire is not so critical in personal, face-to-face interview, as the surveyors are able to interpret questions or clarify points. The design of the survey involved the following basic steps:

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[3] The areas of interest were provided to the survey team in the statement of work and were subsequently discussed in meetings with ODUSD(I&E) staff. Consensus was reached on the overall goals for the study and in the interpretation of the areas of interest.

[4] *The Survey System,* Creative Research Systems, last accessed January 2005 at http://www.surveysystem.com/sdesign.htm.

[5] *Using Structured Interview Techniques,* June 1991, U.S. General Accounting Office, Program Evaluation and Methodology Division. GAO/PEMD-10.1.5 Structured Interviewing, http://www.gao.gov/special.pubs/pe1015.pdf.

1. Establishing the study goals and getting consensus

2. Determining installations and other groups to sample/interview

3. Developing a survey protocol

4. Creating questionnaire/talking points for interview

5. Pre-testing the questionnaire/talking points

6. Conducting interviews, analyzing, and reporting findings.

Installation Site Visits

Each of the four services (Army, Navy, Air Force, and Marine Corps) was requested to submit recommendations for installations to be included in the survey. Each service put forward two installations, with the exception of Navy, which nominated three installations. The three Navy installations were in close proximity to each other. Although they were under three different commanders, there was some overlap in natural resources management and in community involvement and so all three were included in the study.

Each installation was visited for a period of two to three days, during which time interviews were conducted with staff and a site tour was usually conducted. The site visits were conducted in late 2003 and in 2004. A total of five Horne Engineering staff conducted the site visits, with two or three staff attending each site visit. For consistency, one Horne employee participated in all nine site visits and a second employee participated in six site visits. The following installations were included in the site visits:

- MCB Camp Lejeune, North Carolina

- MCB Camp Pendleton, California

- NAS Corpus Christi, Texas

- NAS Ingleside, Texas

- NAS Kingsville, Texas

- McChord AFB, Washington

- Patrick AFB, Florida

- Fort Custer Training Center, Wisconsin

- Fort Stewart, Georgia.

A point of contact was identified for each installation. This individual, who was usually in the natural resources branch, organized the site visit and identified installation personnel who would participate in the meetings. The site meetings were conducted in a relaxed atmosphere and this provided a positive and free flow of information. Because the survey staff was available over a period of several days, this meant that the meetings could be adjusted to the schedules and availability of installation staff. Additional installation staff participated as needed. The installation meetings not only involved natural resources and environmental staff, but included range managers, flight safety officers, comptrollers, on-site contractors, administrative staff, law enforcement, and members of commanders' staffs. When visiting an installation, efforts were also made to meet with and interview

representatives of the state fish and wildlife offices, staff of the FWS local field offices, and other important stakeholders.

A questionnaire/talking points list was used to stimulate conversation during the interviews (Appendix A). It was forwarded to the installations and others before the meetings so that the prospective interviewees would be aware of the range of topics that might be discussed, and if needed, they would have time to formulate responses or gather supporting information. However, it was not a requirement that they should have read or answered the questionnaire before the meeting. The same questionnaire was provided to all interviewees, regardless of whether they were installation, headquarters, state, or FWS staff. Not all questions were equally relevant to all groups; however, it was felt that for openness and consistency, all groups should be familiar with the range of questions and topics being discussed.

Although rather lengthy, the questionnaire served as a checklist to ensure that the full range of topics was discussed. The order in which the topics were discussed was not important, and in most cases, the discussions did not follow the order of the questions but rather followed the particular focus for an installation or group. The questionnaire was based on the 11 areas of interest identified by ODUSD(I&E) as being important for identifying best practices and effective INRMP implementation. Because of overlap among some of the areas of interest, the questionnaire was developed around seven general question/topic areas, plus a background area:

- Background information

- Supporting the military mission

- Ensuring ecosystem health

- Funding, project completion, and compliance requirements

- Monitoring INRMP effectiveness and adaptability

- Receiving and using stakeholder input

- Meeting ESA requirements and protecting species at risk

- Organizational effectiveness.

A total of 48 questions was developed covering the eight topic areas (Appendix A). Before being forwarded to installations, the questionnaire was pre-tested by Horne staff, and review comments were solicited from service headquarters staff, select FWS local and regional staff via the FWS Headquarters office, and from IAFWA headquarters. All comments received were addressed, and the questionnaire was modified as appropriate. No statistical analysis or other assessment of the responses was made as the purpose of the questionnaire/talking points was for information-gathering purposes and to stimulate discussion. The information from the installation site visits is presented below in the section titled Best Practices.

INRMP Document Review

A second component of the overall study involved reviewing in detail a selection of INRMP documents. The intent of the INRMP document review was to identify best practices that may be applied to INRMPs being developed or updated. The review attempted to provide an unbiased assessment of the quality, completeness, and readability of INRMPs selected from across the four services. The INRMP may be the only informational piece about an installation that is read by a wide audience, an audience that in addition may be unknown to the installation. The content and readability

of the INRMP are critical to an installation in projecting a positive image, not only to regulatory and review agencies but also to the broader public. An INRMP does not necessarily reflect the management that is occurring on the ground, but the INRMP is what the agencies see for both review and approval purposes, and it is also what the public and other interested parties see.

The review approach did not follow a standardized methodology or procedure; however, steps were taken to avoid bias and to maintain consistency in the review. Although not statistically valid, the findings of the review do provide useful information on best practices and also indicate shortfalls in certain areas with regards to the written INRMP document.

A total of 20 INRMP documents were reviewed. For the most part, the final selection of INRMP documents was made by the study project manager; however, the Army provided a short list from which to choose. Rather than choosing equal numbers of INRMPs from each of the four services, the number of documents reviewed from each service was weighted using a combination of the total acreage of land under management by each service and the total number of INRMPs completed for each service. The INRMP documents from the nine installations included in the site visits were not included in this part of the study as the intent was to examine the readability of the documents without the benefit of communicating with the installations.

Table 1. INRMP Documents By Service

	Acres (as percentage of all military lands)	*Installations (as percentage of all services)*	*INRMPs included in review*
Army	50	47	10
Air Force	34	26	2
Navy	8	23	6
Marine Corps	8	4	2

Note: The number per service reviewed was calculated as a function of the percentage of acreage managed by each service and of the percentage of installations by service having INRMPs. Information is based on 2003 DoD data–approximately 29 million acres, and 368 INRMPs nationwide.

The areas of interest identified by ODUSD(I&E) for the main part of this study were also used as a basis for the review and comparison of the INRMP documents. The 11 areas of interest investigated through the interview process were not all equally relevant to the INRMP document review and so the areas of interest were grouped into six more applicable categories. The INRMPs were reviewed to determine how the following issues were addressed and to identify if there were any preferred or best management approaches that might be applicable across DoD lands:

- Military mission and organization

- Funding, projects, and compliance

- Adaptive management, monitoring, and ecosystem health

- Coordination with internal stakeholders

- Coordination with external stakeholders

- Threatened and endangered species and species at risk.

Four to six criteria under each category were identified and the INRMPs were then reviewed against these criteria to determine how well the INRMPs addressed each category. The six categories and the associated criteria used in the INRMP review are shown in Appendix B. The degree to which an INRMP addressed the various criteria of each category was determined by assigning a clarity rank. For example, under the adaptive management, monitoring, and ecosystem health category, the INRMPs were reviewed to determine whether they included a discussion of these topics, whether they included clearly stated goals and objectives, and so forth. A clarity rank of 0 indicated that the INRMP failed to address the topic, whereas a clarity rank of 10 indicated that the INRMP fully addressed the topic. Clarity rankings were assigned and totaled by category and by service. The rankings were intended to show only trends and are not statistically valid.

Copies of INRMPs were obtained from each of the four services by contacting installations directly. Other requesting the INRMPs, there were no communications with the installations for follow-up questions or inquiries. The intent of this part of the study was to conduct a review of an INRMP just as an outside review agency, stakeholder, or member of the general public would use an INRMP. Most of the INRMPs were provided in electronic format and were downloaded directly onto a dedicated ftp site. The information from the INRMP document review is presented below in the section titled Updating the INRMP Document.

Updating the DoD INRMP Implementation Handbook

The third supporting component of the study was to update the web-published *Resources for INRMP Implementation—A Handbook for the DoD Natural Resources Manager.* The handbook required updating to reflect DoD's October 2002 and November 2004 guidance and reporting requirements, new service regulations and guidance, and new coordination guidance for the FWS. Also, all hyperlinks in the handbook were verified and updated as necessary. The completed update is available on DENIX at http://www.denix.osd.mil/inrmp.

BEST PRACTICES

Varied examples of best practices for INRMP implementation were identified by the study. Some were unique to a particular installation, but some successful practices were found at several installations. In every case, interviewees were overwhelmingly positive about the INRMP process and the benefits it brings to their installation, organization, region, or agency. Some areas of implementation remain challenging, but the fact that each installation has an INRMP gives flexibility to the overall management and is a means of reprioritizing actions when needed and gauging the impact of schedules that may slip. Many installations are entering the first major update period for the INRMP, and installation managers are enthusiastic about using the update as an opportunity to improve the INRMP and expand on certain areas of management.

INRMP Implementation

The study examined the effectiveness of INRMP implementation with regard to the 11 areas of interest to ODUSD(I&E) and with the intention of identifying best practices. The following are the study findings for each area of interest. In most cases, there was not a single clear-cut best practice associated with a single area of interest. Rather, best practices tended to be associated with several of the areas of interest that were similar. For example, best practices for funding, project completion, and meeting compliance requirements tended to encompass all three areas combined.

Supporting the Military Mission

BEST PRACTICE: NATURAL RESOURCES MANAGEMENT STAFF UTILIZATION

To be successful in this area, INRMP implementation should proactively support and sustain the military mission, and there should be mechanisms in place to prevent a net loss to the military mission. Frequent and open communications and adequate input from range managers, trainers, flight safety, and other military groups are key to this area of INRMP implementation.

The study findings indicated that in no instance is mission support adversely impacted by any natural resources management activities. In fact, for every installation visited, mission would be severely impacted and restricted if it was not for the many procedures, activities, and projects outlined in the INRMP that are being implemented by the installation natural resources staff. However, the full potential of the on-site expertise that resides in the natural resources staff is not being recognized or tapped into at most of the installations visited in the study.

As the group most knowledgeable about the condition of the land and the associated environmental constraints, the natural resources staff has a wealth of information and is responsible for providing suitable and sustainable training and testing lands. However, in many cases, this resident expertise has not been fully tapped. This usually results from a lack of free-flowing, continual communications between the military range managers and trainers and the natural resources groups. Integration is what sets the INRMP apart from other installation plans and programs. The military structure is generally not conducive to having free-flowing communications among different parts of the organizational structure and so integration is not easily achieved. A lack of communication among the natural resources managers and the military trainers and operators has long been recognized and acknowledged. In some instances, this difficulty in communication results in less-than-optimum situations and is contrary to a team and partnering approach.

BEST PRACTICE: UP TO DATE RANGE MANAGEMENT AND TRAINING PLANS

In some cases, installations lack up-to-date range management and training plans. This can also reduce the effectiveness of the support provided to range management by the natural resources staff. Without current range management and training plans, it is not possible to do comprehensive management planning, and the resulting use of the training lands is likely not optimal. These plans, such as the **Range and Training Land Program** plan, are intended to be integrated with other installation plans, including the INRMP. When both range management and natural resources management plans are current and integrated, there is less likelihood of conflicts between competing management actions. Several of the installations included in the study were in the process of developing updated range plans, and in most cases, the natural resources staff is providing input to the plans.

BEST PRACTICE: PROACTIVE COMMUNICATION AND UTILIZATION OF NATURAL RESOURCE MANAGEMENT STAFF

Even for installations with current range management plans, it was noted that there is usually little communication between the military training and natural resources management groups. In some cases, it seemed that the natural resources group is regarded as compliance managers who are only consulted when there is a problem or when an obstacle to training arises due to environmental compliance issues. All too often, the natural resources staff is not used proactively, and the range managers and trainers do not take advantage of their expertise. In some cases, range management and the range management plans are considered paramount, and all other installation programs and plans

are considered subservient. Such attitudes are not conducive to fostering open communications and work directly against the integration necessary for ecosystem management and INRMP implementation.

Examples of best practices for proactively supporting the mission and having mechanisms in place to prevent a net loss to the military mission all centered around communications within the installation. Installations that can demonstrate best practices related to mission support have all overcome, for the most part, the typical problems that stem from poor communications—lack of team spirit, reactive versus proactive communications, poor advance notice of training requirements, presumed preeminence of Range ownership, and the environmental group regarded as a hindrance to mission rather than support. When there is good communication among the various installation groups, then much more is achieved than when groups work independently.

Fort Stewart, Georgia, provides a good example of what can be achieved when different installation groups work together. Fort Stewart is the largest Army installation in the eastern United States and supports the 3d Infantry Division (Mechanized), as well as other non-division units, reserves, and agencies. It has a heavy training schedule and can support tanks, field artillery, helicopter gunnery, and small-arms range operations throughout the year. Fort Stewart has considerable environmental constraints, including threatened and endangered species and wetlands. To protect and sustain training, Fort Stewart is developing specific **Integrated Management Prescriptions (IMPs)** for each of its 120 training areas. Each training area is further divided into manageable units, **Environmental Management Areas**, which for the most part follow fire boundaries. A desired future condition for each training area is arrived at through an informal and iterative process by an IMP team. This interdisciplinary team meets every two weeks and includes trainers, Integrated Training Area Management (ITAM), range control, forestry, fish and wildlife, cultural resources and a National Environmental Policy Act (NEPA) staffer. This is a considerable undertaking, and the team is able to complete about 25 IMPs per year. The result of this work is that each training area is operated at its optimum mission support capability and that all parties involved have a role to play in the process and work in close communication with each other.

Another example of how the combined skills of trainers and natural resources staff can be brought together is at MCB Camp Lejeune in North Carolina. Here, the result is a superior, continuous, new training area. The training area begins with an amphibious landing on Onslow Beach and proceeds over the beach and dunes through sandy forested areas arriving at Combat Town. The route traverses the habitats for several of the installation's threatened and endangered species, including sea turtles, sea-beach amaranth (*Amaranthus pumilis*), and the red-cockaded woodpecker (*Picoides borealis*). If left alone, the trainers would find it almost impossible to map out a feasible continuous training route between the beach and Combat Town due to the many restrictions that they would encounter. However, as a result of close collaboration between the trainers and natural resources staff, a viable training exercise area has been developed. Communication played a critical role. By working closely with the trainers and by asking many questions about training frequency, duration, volume, and so forth, the natural resources staff was able to design a new sustainable training area that does not negatively impact the natural habitats.

MCB Camp Pendleton, California, conducts between 40,000 and 45,000 training activities annually and provides training to over 60,000 service members, including active duty and reserve Marine, Navy, Army, Air Force, and National Guard units, as well as training opportunities for national, state, and local agencies. The installation also has 18 federally listed threatened and endangered species, which means there are considerable constraints to training over much of the installation. With such a heavy training schedule and with so many individuals using Camp Pendleton annually, it is critical that current information on the land conditions and environmental constraints reaches the users. A

useful tool that Camp Pendleton has developed is an **Environmental Operations Map**. The map is prepared by the geographic information systems (GIS) section and is updated every six months with information provided by several different sections. The map is available to all users, including trainers and managers, and is an invaluable communications tool.

BEST PRACTICE: REGULAR COMMUNICATIONS WITH INSTALLATION GROUPS

The common feature of these three quite different examples of best practices is that in each case there was a concerted effort to communicate. To have positive and fruitful communications, it is recommended that the natural resources staff take steps to establish some type of program that involves regular communications with the various installation groups, especially with the range managers and operators and with flight safety. This communication must be fully supported by the environmental offices and by the command structure. A major part of the communication effort must be on educating installation staff on the role that the natural resources staff can play in assisting with providing optimal conditions for troop training and also on the responsibility that those groups have in INRMP implementation. Much of this educating can be achieved simply by holding regular communications.

Communications can be set up in whatever way best suits the installation and individuals—it can be relaxed and informal or more structured. Regardless, there is a need for continuous communications, and it is recommended that the natural resources and range managers or flight safety staff meet regularly, even just for 15- or 30-minute sessions, to summarize range and flight safety conditions from a land management or natural resources perspective and to review upcoming training schedules and needs. Even if there is little initial interest in maintaining communications, it is important to press ahead and establish some form of routine interaction.

The DoD Sustainable Range Initiative[6] recognizes the need for integration of all installation management elements. With its focus on land use and the development of sustainable range management plans, there will be an increased emphasis on the range managers interacting and coordinating with all installations groups, especially the natural resources managers. A significant component of the Sustainable Range Initiative is to institute outreach initiatives at national, regional, and local levels to promote range sustainment and to resolve encroachment issues. These are areas where many natural resource managers already have extensive experience because of the INRMP's emphasis on partnering and the requirement to coordinate with federal, state, and local groups. Improved communications among the range or flight safety groups and the natural resources programs is important not only for the continued successes of the INRMP process, but it will also provide benefits far beyond INRMP implementation.

Ensuring Installation Ecosystem Health

Natural resources management as implemented from the INRMP should be able to provide and sustain suitable landscapes for military activities without compromising ecosystem health. To be successful requires having an understanding of or developing a vision of ecosystem health as it pertains to the particular installation and its setting. Success also requires developing goals and objectives for the desired landscape conditions, whether for natural, training, testing, or protected

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[6] Department of Defense Directive 3200.15, *Sustainment of Ranges and Operating Areas (OPAREAs),* January 10, 2003. Available at http://www.dtic.mil/whs/directives/corres/pdf2/d320015p.pdf.

areas, and then adaptively managing the land as directed by knowledge and information gained through monitoring.

The study found that there is a good understanding of ecosystem management and that its application to day-to-day management continues to improve as compared to previous study findings[7]. Refining and improving the ecosystem management aspects of the INRMP was reported by the natural resources managers to be a main focus for many of the INRMPs that are coming due for review and update.

BEST PRACTICE: USE ECOSYSTEM MANAGEMENT IN THE 4 KEY AREAS

Although the process of ecosystem management is reasonably well understood and accepted, it is still not being fully practiced. The reasons for this are several and are not new—insufficient funds for INRMP projects and the oftentimes overwhelming emphasis on threatened and endangered species compliance management have been previously reported[8]. Although commercial forestry should not be a focus of natural resources management on installations, forestry goals may also compete with or be contrary to ecosystem health goals and objectives. Leaving the administrative aspects aside and concentrating on the science, there are four recognizable key areas to ecosystem management: 1) identifying and describing a vision for the installation (that is, a current and desired future condition or state); 2) identifying goals and objectives to move the installation in the direction of its vision or desired future condition; 3) having a monitoring program in place to measure progress to the goals and objectives; and 4) conducting adaptive management as needed to keep the installation on track, should monitoring indicate that progress is not being made as planned. Most installations included in the study have some or all of these elements in place; however, few have a comprehensive approach where there is a good linkage between the projects and activities conducted on the ground to progress towards the stated goals and objectives. Of these four elements, the area that is most lacking is monitoring, with few installations having a mechanism in place to determine progress.

BEST PRACTICE: WHEN SHORT-STAFFED, TRY TO USE PARTNERS AS SOURCE OF HELP

Although somewhat of a generalization, many of the first INRMPs were primarily a documentation and compilation of natural resource and related information. As directed by DoD and the individual services, installations did include goals and objectives in those plans. However, there were few or no links made between a vision for the installation, the goals and objectives, and projects and activities. Now several years on, natural resources managers are keen to refine this area of the INRMP. Baseline information from the first years of INRMP implementation is now available and so many installations are in a good position to focus their efforts. Those installations, however, with no or few on-site natural resources staff, are hard pressed to find the time or necessary skill sets to develop ecosystem management for the installation. This is where partners can be most helpful. The three Navy installations included in the study (NAS Corpus Christi, NAS Kingsville, and NAS Ingleside) do not have on-site natural resources staff ,but the installation environmental managers benefit greatly from the expertise provided through a partnership with the local FWS and Texas Parks and Wildlife

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[7] *Ecosystem Management Evaluation Package: Ecosystem Management Evaluation Report for the Army,* Environmental Policy Institute, September 2001. A study for the Legacy Resource Management Program of the Office of the Under Secretary of Defense (Installations and Environment) tasked to the Army Environmental Policy Institute and conducted by Horne Engineering Services, Inc., under Contract DACA01-99-D-0012, U.S. Army Corps of Engineers, Mobile District; Horne Engineering Project 3188.

[8] See 7 above.

offices. McChord AFB benefits from their long-running partnership with The Nature Conservancy. Through this partnership, McChord AFB became involved in prairie restoration, and The Nature Conservancy currently provides support to McChord AFB on invasive species management.

Several installations may have some difficulty in fully addressing how to merge managing the training lands with goals and objectives to support ecosystem health. The two are not contradictory, and it should be possible to achieve both in almost all cases. However, installations with limited or no natural resources expertise on site are at a disadvantage from not only the management planning and design aspects but also from an implementation side. In these cases, there is little to no monitoring and no opportunity to practice adaptive management.

Partnering with groups such as the FWS, state fish and wildlife agencies, or conservation groups such as The Nature Conservancy can often provide considerable support with overall ecosystem management. By partnering with these groups, installations should not only be able to benefit from the shared technical expertise, but also from participation in regional initiatives in which these groups typically participate. However, the study found that the availability of staff from these agencies may be limiting in many cases (see discussion below on stakeholder input).

In some cases, there was criticism from the FWS for a lack of an ecosystem approach to the INRMPs, but when pressed these same FWS offices indicated that they did not have staff available to provide technical support to the installations. Also, one of the FWS offices contacted held similar expectations for all installations, regardless of the variation in resources available at the different installations, and was critical of one relatively small installation with limited staff and resources.

BEST PRACTICE: USE ECOSYSTEM MANAGEMENT (UMBRELLA) APPROACH INSTEAD OF INDIVIDUAL SPECIES APPROACH

Also, management for threatened and endangered species tends to divert the focus away from ecosystem health. Although the natural resource managers are trying to implement an ecosystem approach or manage areas at a community level, they are often under pressure to manage for a single threatened or endangered species due to compliance requirements of the ESA. MCB Camp Pendleton is one such installation that is strongly driven by the fact that there are 18 federally listed threatened and endangered species on site. However, although natural resource managers have to meet requirements for each species, the sheer number of species and habitats they occupy means that the management is so comprehensive and all-encompassing that MCB Camp Pendleton does achieve ecosystem management. They have developed Riparian and Beach/Estuarine Conservation Plans that are umbrella plans because, although developed primarily for threatened and endangered species, their implementation provides benefits to native species and to human users of the areas.

The Fort Custer Training Center is a good example of an installation that is fully practicing an ecosystem management approach. The Fort Custer INRMP is explicitly ecosystem-management driven and was developed by bringing together a wide group of stakeholders and professionals to form plan development teams. Interest by the stakeholders is retained by including them in an annual review process. Fort Custer has clearly developed and is now implementing the key components of ecosystem management. A desired future condition for the installation is identified; there are goals and objectives for meeting the future condition and projects are being implemented; and there is a comprehensive monitoring program and adaptive management is occurring as indicated by the monitoring results.

BEST PRACTICE: IDENTIFY GOALS, OBJECTIVES, PROJECTS AND ACTIONS IN THE INRMP

Although there is a general understanding of ecosystem management, there is still a lack of understanding how to implement it. The Fort Custer Training Center's comprehensive approach is still somewhat of an exception. As INRMPs are reviewed and updated, attention should be given to making linkages among the stated goals and objectives and the many projects and actions proposed to be undertaken. The INRMP should clearly express the key elements of ecosystem management, including goals and objectives, monitoring, and adaptive management. Projects and actions proposed to be implemented in the updated plans should be clearly linked to progress towards specific goals and objectives[9].

Funding / Project Completion / Meeting Compliance Requirements

These areas of interest are closely linked and the findings from the site meetings overlap considerably. All three address particular aspects of INRMP project and activity funding. The three areas are basically examining how projects are programmed, funded, and implemented; whether funds are distributed in a timely manner; and also whether high-priority "must fund" compliance projects (class 0 or 1) are scientifically credible.

BEST PRACTICE: NO BEST PRACTICE IDENTIFIED FOR FUNDING

Funding continues to be the weakest part of INRMP implementation and appears to be the major impediment to effective INRMP implementation. In spite of this, many installation natural resources managers are succeeding in implementing the INRMPs. However, in many cases, it is a patchwork of projects that are undertaken. One installation included in the site visits indicated that no natural resources projects had been funded for the current year.

For the most part, compliance-related projects, which for natural resources are almost always related to the ESA, are programmed appropriately, approved, and funded, and the funds do reach the intended programs and are used for the intended purposes. This, however, is not the case with non-compliance-related projects. As described by a natural resources specialist during one of the installation site visits, the services' budget systems, such as the Army's Environmental Program Requirements Module (EPRM), were designed for engineering projects with known start and end points, and they are tied to compliance with federal and state laws. Although the Sikes Act Improvement Act of 1997 (SAIA) requires INRMPs to be implemented, the individual INRMP actions and projects are not compliance driven, and many projects are continuous or opportunistic and are not easy to define under the strict legal compliance drivers that are applied to the services environmental budgeting process. There is a need for flexibility and fluidity for natural resources projects; however, the EPRM and other systems are tied to compliance with laws, with the result that many valid INRMP projects are screened out of the budget process.

The programming and funding of INRMP projects can hit obstacles throughout the programming process. Projects may initially be appropriately classified for budgeting purposes, but as they pass through the review steps, some may be reclassified to a lower level or dropped from the programming process. The DoD guidance for classifying projects is not adhered to and, in many cases, only projects

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[9] The DoD INRMP implementation handbook includes a chapter on monitoring success and addresses the key components of ecosystem management. Chapter 8, Monitoring Progress and Measuring Success in *Resources for INRMP Implementation—A Handbook for the DoD Natural Resources Manager* (http://www.denix.osd.mil/INRMP).

that have a legal driver or involve human safety issues are being considered as "must fund." The programming process and budgeting software systems used by the services allow and require relatively detailed project information; however, once budgets are funded, there is no equivalent tagging of awarded funds back to approved projects. In many cases, it was reported that projects were budgeted, approved, and funded, but the funds were either not received or not applied to the projects. As a result, the same projects had to be resubmitted in subsequent budget requests.

Some service headquarters offices have implemented steps to try to halt this misuse of the budgeting process. When alerted to this problem, USMC headquarters required installation commanders to confirm at midyear that their INRMP was being fully funded and that full implementation for the fiscal year would be attained. This forced installation commanders to focus their attention on INRMP funding requirements.

The DoD measures of merit (MOMs) issued in November 2002 also attempt to get at the funding problems by requiring annual reporting of INRMP implementation. The DoD MOMs attempt to gauge INRMP implementation and compliance with the SAIA by requiring installations to submit data on the budget request for class 0/1 ("must fund") projects, the actual amounts funded for these projects, class 2/3 project funding, and a list of unfunded 0/1 projects in excess of $50K. Based on the study findings, it is not clear that this measure of merit reflects an accurate picture of INRMP implementation because of how projects are classified for budgeting purposes. As mentioned above, only projects with a clear legal driver are being put forward into the budget process, and most other projects are either not assigned a class or are assigned a lower class (2 or 3) that may be approved but will not be funded. Although INRMP implementation is required by the SAIA, many do not consider it to be a legal driver for individual INRMP projects. However, the recently updated and reissued Air Force Instruction 32-7064, *Integrated Natural Resources Management*[10], provides considerable support for INRMP project funding by not only providing detailed definitions for the funding classes but by also providing a clear definition of INRMP implementation. The Air Force definition of INRMP implementation includes the requirements that installations must actively request, receive, and use funds for Level 0 and Level 1 "must fund" projects and activities and that installations must execute all "must fund" projects and activities.

The strict classifying of projects based on legal drivers that has occurred in the services has the effect of budgets showing only class 0/1 projects, and these will likely be the more critical from a compliance or legal standpoint. This bias towards class 0 and class 1 projects in the budget process has the effect of reducing or eliminating the overall number of unfunded projects that will show in the annual reporting for INRMP implementation. The source of the bias may come from different sources and from different levels depending on the service but most influence seems to be at the installation level.

Because class 2 and 3 projects fail to be funded and are frequently no longer included in budgeting, they may no longer be included in INRMPs and may be eliminated as installations prepare the INRMP updates. Indeed, several installations stated that the only projects included in the current INRMP were "must funds" (that is, class 0/1).

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[10] The Air Force Instruction 32-7064, *Integrated Natural Resources Management,* was issued on 17 September 2004. It provides detailed information on all aspects of natural resources management and includes dedicated chapters on implementing natural resources management and on natural resources budgeting. The full instruction is available at: http://www.e-publishing.af.mil/pubs/publist.asp?puborg=32&page=2.

BEST PRACTICE: FOLLOW STANDARD METHODS AND PROTOCOLS, AND SOLICIT EXPERT SUPPORT WHEN NEEDED

Concerning the scientific credibility of projects undertaken, the study found that there is a high level of scientific rigor applied to natural resources management. Indeed, in many instances, the installations are held in high regard by state agencies, researcher groups and other interested parties for their conservation and stewardship work. Projects that are undertaken follow standard methods and protocols and generate reliable data and information that can then be used in decision-making.

The natural resources staff at military installations is a very diverse, highly qualified, and dedicated group that includes individuals who are highly respected in their fields. When needed, they solicit the support of others to assist with project design and implementation. Partner organizations, such as The Nature Conservancy, university groups, the U.S. Geological Survey, FWS, and state agencies, may be consulted to assist with identifying appropriate technologies and methods.

Monitoring INRMP Effectiveness

Monitoring continues to be an area of INRMP implementation that is slowly evolving. This area of interest focused on identifying metrics that installations may have in place to monitor INRMP effectiveness and determining whether there are sufficient natural resources professionals to oversee and evaluate effectiveness. This area overlaps with the area of interest concerning ensuring ecosystem health. In addressing monitoring, one can identify at least three distinct and somewhat unrelated types of monitoring—monitoring progress towards ecosystem management goals and objectives (INRMP effectiveness); compliance monitoring for specific species or parameters (threatened and endangered species, wetland restoration, and so forth); and monitoring and reporting data in response to specific metrics (DoD Conservation Measures of Merit).

BEST PRACTICE: MAKE MONITORING INTEGRAL PART OF PROJECT SO FUNDING OF MONITORING HAS BETTER CHANCE OF APPROVAL

Only two or three of the eight installations included in the study have what may be considered comprehensive monitoring programs in place to gauge the effectiveness of INRMP implementation. In general, most monitoring conducted by installations is to support specific requirements associated with threatened and endangered species, forest inventory, or with hunting or fishing quotas. Many installation managers acknowledged that in the absence of a legal driver, monitoring activities are not considered priority activities and are denied funding. In some cases, monitoring has not even been proposed due to the anticipated denial of funding. Only Patrick AFB stated that monitoring is consistently funded—when developing the budgeting for a project, any monitoring component is included as an integral part of the project. This is how the AF HQ natural resources office expects projects to be submitted and they routinely support the funding requests.

Ideally, all monitoring conducted should contribute to evaluating the effectiveness of INRMP implementation; however, most installations have not yet reached this point. The study interviewers found that monitoring in the context of INRMP implementation is still very much under development by the various installation staffs. However, this is a positive step in the continued improvement of the INRMP process. Many installation natural resources staff interviewed feel that the current INRMPs lack a sound monitoring component. This was based on their having critically reviewed the first plans completed. In one sense, this is a form of adaptive management—namely, while the original installation INRMPs may include goals and objectives, the staffs have concluded that it is not possible to determine the effectiveness of the plan in reaching the goals and objectives in the absence of a monitoring program. This is exactly what installations should be doing–identifying weak points

and adjusting as needed. Therefore those installations that have identified the weakness in or absence of a monitoring component will try to include monitoring in the upcoming plan updates.

BEST PRACTICE: INCLUDE A ROBUST MONITORING PROGRAM

Based on our review of the installation INRMPs, it should be possible for most installations to include a robust monitoring program in the next scheduled INRMP update, although funding remains problematic for several. Most installations already have the elements of monitoring programs through the ongoing activities. These elements now need to be linked into a broader and more meaningful perspective. Baseline plant and animal studies have been conducted at most, if not all, installations, and many already monitor important species and species that have specific habitat or ecosystem requirements. These various components, most of which have either been conducted or are routinely conducted as compliance monitoring, need to be brought together under an overarching set of meaningful objectives. Bringing these various actions together will provide an ecosystem management approach and may also identify previously unacknowledged benefits to the systems that are occurring as a result of the land management practices. An example from the southeastern United States where ongoing practices can have unintentional benefits to the ecosystem is when prescribed burning is conducted to reduce fuel loads for fire safety purposes and to manage habitat for specific species. However, the prescribed burning also has a controlling effect on invasive species—this benefit was not recognized until a more holistic and ecosystem approach was taken.

BEST PRACTICE: SEEK EXPERT ADVICE TO IDENTIFY MONITORING PROGRAM ELEMENTS

In the above example, using hindsight it is easy to identify the need to add an invasive species aspect to monitoring, but in most situations it is much more difficult to identify appropriate elements to include in a monitoring program. This is an area where installations may seek outside expertise to assist them in developing a monitoring program. The first groups where one would expect to have such experts are the FWS and the state fish and wildlife agencies. However, staff workloads and staff shortages mean that there is usually little opportunity for technical support from these groups. (See next section on stakeholder input.) There are, however, some notable exceptions. Again, the exceptions are installations where there is active and ongoing partnering and collaboration among the installations and the agencies. MCB Camp Lejeune was complimented by the North Carolina State Heritage Program for their use of inventory information and data in making management decisions and for acting on information and suggestions provided by the state. This installation has an outstanding relationship with the state, and they meet regularly with the Natural Heritage Program. There are no requirements from the state to monitor and submit data; however, the installation and the Natural Heritage Program routinely share data.

BEST PRACTICE: EMPLOY TRAINING ON ECOSYSTEM COMPONENT IDENTIFICATION

To assist managers in establishing or expanding monitoring programs, it is recommended that DoD provide training on how to identify key ecosystem components and how to develop monitoring programs to support INRMP implementation. Most installation natural resources managers would be keen to participate in such training. Also, offering such a training class would help to identify monitoring as a critical component of successful INRMP implementation.

Fort Custer Training Center provides a good example of best practices for monitoring INRMP implementation. In addition to monitoring individual projects, Fort Custer has a program to monitor INRMP implementation. It recognizes three different types of monitoring related to INRMP implementation: implementation monitoring; effectiveness monitoring; and validation monitoring. The installation also uses stakeholders in the annual review of INRMP implementation.

BEST PRACTICE: INCLUDE MONITORING IN INRMP UPDATES

It is recommended that as installations review the INRMPs for update, they include monitoring as an integral part of implementation and not as stand-alone activities. In order for monitoring to pass the budget review process, it must be portrayed as a key component for successful INRMP implementation. In the absence of monitoring progress, there is no way for an installation to determine whether the management practices are bringing them any closer to the goals and objectives. Indeed, in the absence of monitoring, attaining the desired future condition for the installation, and especially for mission support, could be jeopardized.

Concerning threatened and endangered species monitoring, discussions with several installations and follow-up discussions with the resource agencies revealed that, although installations have many requirements to monitor threatened and endangered species, there are very few requirements that the collected data be reported. Even in cases where monitoring data may be submitted to resource agencies, there may not be feedback to the installation on whether the installation's management for a particular species is contributing to the recovery of the species. A lack of local and regional data makes it difficult for installations to gauge progress for themselves—it is beyond the abilities (and authorities) of most installations to fund off-post monitoring activities. Although data currently collected may not have an immediate use beyond the installation, there are legal requirements that monitoring data be collected and retained. Again, this comes back to the issue that resource agencies have too few staff and too little resources to conduct the technical work needed to support the ESA and state laws and regulations.

Most managers interviewed acknowledged that the current DoD metrics[11] are not a good indicator of INRMP implementation or effectiveness. No conclusions can be drawn from the DoD metrics as to how effective the INRMP is in supporting the mission or in how well it is protecting the natural resources. However, these metrics do provide some level of assessment and also a minimum measure of achievement that installations strive for. The metrics, which were introduced in 2002, are formal measures of merit (MOMs) for the conservation program. Progress towards meeting the MOMs is reported in the annual Environmental Quality Report to Congress. The emphasis of the metrics is not on ecosystem management or INRMP effectiveness, but rather on whether appropriate groups were consulted on the INRMPs, on the level of coordination with the review agencies, and on the budgeting and funding of INRMP projects. The individual services are currently working with ODUSD(I&E) Conservation to develop more appropriate INRMP metrics. The Navy has the lead for this and is working with the Marine Corps. They hope to have a metrics model available in 2005.

Stakeholder Input

Communications with stakeholders varies widely between installations, but in general, once the INRMPs are in place and being implemented, there is not much input from stakeholders. This is certainly the case for the public—all installations included in the study reported that they do not receive unsolicited comments from the public. This was also the case found in a previous study, where stakeholders and interested parties had participated in the development of the INRMP, but

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[11] The conservation metrics for preparing and implementing INRMPs are given in the 10 October 2005 Memorandum *Implementation of Sikes Act Improvement Act: Updated Guidance,* issued by the Office of the Under Secretary of Defense.

interest in the INRMP waned once it was completed[12]. This likely reflects the fact that most interested groups that do not have a legal requirement for involvement (as do state fish and wildlife agencies and the FWS) have gained sufficient confidence and trust in an installation's natural resources management that they no longer feel a need to participate. Members of these groups may maintain knowledge of installation natural resources management through recreational activities conducted on post or through an installation's outreach activities (for example, rod and gun clubs, watchable wildlife programs, annual bird counts, scouts, K-12 educational activities, volunteer programs).

BEST PRACTICE: MAINTAIN DATAFLOW AND CONTACT THROUGH OUTREACH

Even though there is no apparent interest from the public, it is important for installations to establish and maintain programs that allow interested groups and individuals access to information on the installation's natural resources and the management of the resources. This is especially the case for installations that are no longer open to the public. For those installations, it is important to retain some form of information flow—posting relevant sections of the INRMP on the internet, installation outreach activities such as Earth Day, articles in local papers, organized site visits for educational groups, volunteer activities, and so forth. The SAIA and DoD guidance require that the public has an opportunity to review and comment on the INRMP and updates; however, it is best to have an ongoing campaign and not just communicate when there is a specific or urgent need.

State Fish and Wildlife Agencies. With some exceptions the study also found there is little input from state fish and wildlife agencies. Involvement by state agencies is primarily limited to the preparation of the INRMP, and there is generally little-to-no involvement in INRMP implementation. Although installations are encouraged to consider state-listed protected species in their management, there is no legal driver for this and so there is no requirement for consultation with the state on state-protected species. Most interaction with the state agencies is related to fish and game rather than ecosystem management. In several instances, installation staff reported that they would like more interaction with the state agencies so that regional issues could be addressed and they could partner on initiatives. In most cases, this lack of interaction was due to staff shortages at state agencies rather than there being no need for ongoing state involvement. In these cases, the installations reported that it is very difficult to contact the state staff due to the workloads of the state staff.

The inability of state fish and game offices to participate in INRMP implementation because of a lack of staff was highlighted in the study when the study interviewers attempted to contact state agencies for input. A first problem encountered was that at the state level, it was not clear which state office(s) had responsibility for responding to issues related to INRMPs and the Sikes Act. This may be partly due to the fact that state agencies are usually organized into distinct groups—game and fish, plants, wetlands, recreation, and so forth, and do not have a single point of contact for the more comprehensive ecosystem approach of the INRMP. Frequently, our staff interviewers were forwarded from one office to another. In many cases, communications with the state were not successfully concluded. Also, even when an office and point of contact were identified, we were not successful in arranging a meeting, regardless of the number of phone messages and emails. Some installations reported similar difficulties in coordination with the state and took the approach that, even if the state

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[12] *Ecosystem Management Evaluation Package: Ecosystem Management Evaluation Report,* The Army Environmental Policy Institute, September 2001. A study for the Legacy Resource Management Program of the Office of the Under Secretary of Defense (Installations and Environment) tasked to the Army Environmental Policy Institute and conducted by Horne Engineering Services, Inc., under Contract DACA01-99-D-0012, U.S. Army Corps of Engineers, Mobile District; Horne Engineering Project 3188.

representative was not an active participant, the installations continued to provide information to the state representative by e-mails, correspondence, and telephone.

U.S. Fish and Wildlife Service. Most communications that occur between FWS offices and installations concerns threatened and endangered species management and consultation under Section 7 of the Endangered Species Act (see section below on meeting ESA requirements). The study revealed there is little input provided by FWS on overall INRMP implementation. This is in part due to the fact that administering the ESA is a primary focus of and legal requirement for the FWS, whereas providing technical assistance to military installations was acknowledged to be far down the list of FWS responsibilities. Also, staff at the local or field offices of FWS are more familiar with management of the locally occurring threatened and endangered species than with supporting military installations in applying the federally mandated ecosystem management approach to military lands. Some FWS staff working at the field level were not familiar with the regional FWS Sikes Act Coordinator responsible for their region and the installation in question.

BEST PRACTICE: DEVELOP RELATIONSHIP WITH LOCAL FWS REPRESENTATIVES

Many installations reported that they receive little input from FWS. In a few of these cases, the lack of communication from FWS was because there is a level of comfort and trust between the FWS office and the installation and there is little need for continuous communication. Even in these cases, however, the lines of communication remain open, and either party is usually very responsive when a request for input comes in. Such situations take several years to develop and often depend on the personalities of the individuals involved—the individuals involved at both FWS and installation offices worked hard to develop and nurture these relationships.

In most cases, the lack of communication between FWS and installation offices was indicative of several problems—a history of poor or failed communications, poor understanding of each other's authorities and responsibilities, or too few FWS staff knowledgeable of INRMP process. Most FWS offices encountered during this study seemed to have too few staff available to provide technical support and input to military installations, other than that related to threatened and endangered species management. Indeed, when conducting the study, many attempts were made over several months by the interviewers to meet with FWS representatives. But just as with some state offices, we were unable to reach staff by either telephone or by e-mail. Out of a total of seven FWS offices, we were able to contact staff and meet with staff at only four offices. Therefore, the information for the study concerning the FWS is based on meetings with only four offices and with FWS headquarters. It was not possible to verify that the inability to meet with us was due to staff schedules versus an unwillingness to take time to discuss the INRMP process. However, in meeting with some FWS staff, we were reminded that their assistance with INRMP development and implementation is considered a new initiative for which they receive no additional staff or funds. This type of response may be somewhat isolated. However, this point of view is not conducive to forming strong partnering relationships and would seem to place installations at a disadvantage even before any coordination has occurred.

Although participation in the INRMP development and implementation process is a new requirement for the FWS, the agency in fact has a history of providing support to military installations that predates the original 1960 Sikes Act. Prior to the INRMP requirement, the FWS supported military installations with the development of cooperative wildlife management plans. Through fiscal year 1993, appropriations authorized to carry out this work and other provisions of the Sikes Act related to military lands were $3 million per year for the Secretary of the Interior and $1.5 million per year for

the Secretary of Defense[13]. Although budget requirements have changed considerably since that time for both the FWS and military natural resources programs, it is apparent that this level of support by the Department of Interior has not been maintained. As stated in testimony to a 2003 federal subcommittee on reauthorization of the Sikes Act, expenditures on INRMP-related work conducted by FWS staff in 2002 was only $897,000. An additional $2.2 million was contributed in 2002 by 21 installations, with most of these funds being used to hire full-time FWS employees to work exclusively on military installations.[14]

BEST PRACTICE: DOD FUNDING OF ADDITIONAL FWS STAFF WHEN FEASIBLE

The FWS staff is clearly overextended and unable to meet many of its responsibilities. While DoD is able to provide some funds to hire full-time FWS employees, this would not seem to be a long-term solution and is seen by some as a potential conflict of interest. However, in the short term, the added support from DoD-funded FWS staff hires is facilitating coordination and cooperation for some major installations and allowing both the FWS and installations to meet the requirements of the SAIA. Consultations with FWS can extend to several years, and a lack of staff and staff turnover at the FWS during the consultation process can considerably extend the time to complete agreements.

MCB Camp Pendleton, which is included in this study, is one of the military installations that has supported the hiring of FWS staff by funding two staff positions to coordinate on behalf of the installation and DoD. MCB Camp Pendleton has 18 federally listed threatened and endangered species, and therefore considerable time and resources are expended in consultations with the FWS and on management for the threatened and endangered species. The addition of two DoD-supported staff to the local FWS office is intended to improve coordination with the FWS and facilitate the consultation process.

The best practice for this area of interest is clearly that installations must establish partnerships with stakeholders in order for the installations to get the desired level of input on INRMP implementation, regional initiatives, and so forth. Installations that have established partnerships or that participate as a partner in an existing organization reap the benefits from interacting with these wide-ranging, assorted, or specialist groups—the installations can learn of local and regional initiatives, there is a sharing of knowledge and resources, there is opportunity to have early coordination on upcoming installation actions and projects, and installation public relations is facilitated through networking with partners.

BEST PRACTICE: FORMING PARTNERSHIP ORGANIZATIONS

Some installations have taken a somewhat formal route in establishing partnerships. The South Texas Natural Resource Partnering Team is example of installations that have been successful in proactively partnering with local and regional groups. This partner organization was formed in 2002 and includes NAS Corpus Christi, NAS Kingsville, and NAS Ingleside, the FWS, and the Texas Parks and Wildlife. The Team deals with early coordination on Navy activities, review of INRMP implementation, threatened and endangered species management, and a range of outreach activities.

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[13] Center for Wildlife Law, University of New Mexico, Chapter 4 - Statute Summaries, *Federal Wildlife and Related Laws Handbook.* http://ipl.unm.edu/cwl/fedbook/sikesact.html.

[14] Testimony of Dr. Benjamin N. Tuggle, Chief, Division of Federal Program Activities, U.S. Fish and Wildlife Service, before the House Resources Subcommittee on Fisheries Conservation, Wildlife and Oceans hearing on the Sikes Act Reauthorization Act, April 10, 2003. http://laws.fws.gov/testimon/2003/tugglessikes4.10.html.

Over a period of almost a year, the team worked together to develop mission statements, goals and objectives, standards of commitment, and measures of success and formalized the process by having the partners sign a charter. The partnership operates following a business practice model that helps maintain communication and coordination. The study interviewers attended one of the formal meetings of the partnership and were impressed by the level of attendance by senior staff of all the partners and by the presentations and open discussions of topics affecting all of the partners. The attendance by the Navy staff was particularly impressive, with commanders from each of the three Navy installations in attendance, as well as environmental managers from the Southern Division of NAVFAC and installation environmental managers.

The Onslow Bight Partnership is a regional initiative with a focus on developing and implementing strategies for conservation and enhancement of biological diversity and ecosystem sustainability for the Onslow Bight area in coastal North Carolina. MCB Camp Lejeune is recognized as a leader in the partnership, whose other members include the North Carolina Natural Heritage Program, the FWS, the U.S. Forest Service, the North Carolina Wildlife Trust, and others.

In some cases, there seemed to be some hesitancy in participating in partnerships because of a lack of resources. But installation natural resources programs are certainly not alone in dealing with budget shortfalls—state agencies and the FWS also operate under strict fiscal conditions. It was noted in talking to some agencies that there is a tendency for state and FWS offices to view installations as having deep pockets as far as funding conservation initiatives. This can lead to misconceptions about how much installation natural resources managers can achieve—meeting regularly in a partnership setting will provide an opportunity to educate the partners about the constraints on installation natural resources management.

BEST PRACTICE: REGULAR AND CONSTANT COMMUNICATIONS WITH STAKEHOLDERS

Best practices and recommendations for soliciting and then using input from stakeholders depends on keeping stakeholders in the loop. Even if stakeholders are nonresponsive, installations should maintain a line of communication—sending e-mails or leaving voice messages may be sufficient. It is important to arrange times to go to the state and FWS offices and to reciprocate by requesting they come to the installation. Installations staff should not get discouraged if the agencies are not responsive, and they should remember to include the Sikes Act coordinator in meetings.

BEST PRACTICE: BE EXPLICIT WHEN REQUESTING ASSISTANCE

When requesting assistance, it is important to be explicit—let the agencies know what is not wanted as well as what is wanted. As an example in how to prepare for the INRMP update, a request to FWS may read as follows: "This is a request for input based on your office's technical expertise. Please provide comments and suggestions as to how we may better incorporate the management practices for x, y, and z threatened species into the ecosystem approach that is used for the installation lands. Specifically, we would like to identify goals and objectives for threatened and endangered management that provide a benefit not only to those species, but also support or are not counterproductive to management of the installation's resources as a whole. Please limit your comments to the technical and practical aspects: the format and layout of the INRMP will be completed at a later date by our staff." This somewhat blunt but directed request should focus the reviewers and hopefully eliminate less welcome editorial and typographical comments.

In some cases, it was found that agencies felt discouraged from participating because their solicited and unsolicited comments appeared to have been ignored by the installation. In some cases, however, it was revealed that installations were unaware that some agency staffs felt their input into the

INRMP process had been ignored. In all cases, it is important to acknowledge receipt of comments and also to offer an explanation as to why they may not have been included.

BEST PRACTICE: OUTSIDE GROUP PARTICIPATION

In general, installations that have the best record for stakeholder coordination are those that actively participate in local and regional partnering opportunities and initiatives or that actively seek out participation from outside groups. Fort Custer is one installation that actively seeks input on a regular basis. In preparing their INRMP, Fort Custer actively solicited input from not only the FWS and the State, but also from local landowners to gain a regional perspective. Regulators, professionals, and partners comment on the INRMP, and there is a formal annual review process. Each year, reviewers are invited by letter to participate in the annual review and are sent copies of the INRMP implementation steps and a status report.

Meeting Endangered Species Act Requirements

The information gathered from the study for meeting ESA requirements overlaps with the above topic of stakeholder input. This topic specifically looks at whether installation INRMPs can meet the FWS criteria for a management plan that may be substituted in place of critical habitat designation for federally listed threatened and endangered species. A 2004 amendment to the Endangered Species Act allows, in some specific circumstances, an installation INRMP to be used as a substitute for critical habitat designation. Therefore, the intent of this area of interest was to identify best practices by examining whether installation INRMPs (those included in the study) would be effective in the conservation of federally listed species and sufficient to support Section 7 consultation, and so be able to meet the FWS requirement for avoiding critical habitat designation.

A difficulty encountered in addressing this topic was that the installation INRMPs included in the study predate the 2004 legal decision that allows INRMPs to be substituted for critical habitat designation, and therefore most were not written with the intention of meeting the FWS criteria[15]. Also, several natural resources managers indicated that there was little interest by their installations at the present time in proposing to submit the INRMP in lieu of critical habitat designation. Those installations either had few threatened and endangered species to manage or had expended such efforts on previously reaching agreements with FWS on threatened and endangered species issues that they did not want to "rock the boat" by reopening consultations and coordination with the FWS in order to have them review the INRMP for possible substitution for critical habitat designation.

Although not all installations had an interest in using the installation INRMP as a substitute for critical habitat designation, the topic was discussed. Overall, the managers felt that the INRMP could potentially meet the FWS criteria. However, the managers felt that it was unclear how the criteria should or would be interpreted and how adherence to the criteria would be determined[16]. For example, the phrases "provides a conservation benefit" and "provides certainty … will be effective"

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[15] The FWS criteria can be found in the 10 October 2005 Memorandum *Implementation of Sikes Act Improvement Act: Updated Guidance,* issued by the Office of the Under Secretary of Defense and are also partly reproduced at question 37 in the study questionnaire/talking points list provided in appendix A.

[16] The three FWS criteria used to determine whether an INRMP provides adequate special management are: 1) The plan provides a conservation benefit to the species; 2) The plan provides certainty that the management plan will be implemented; and 3) The plan provides certainty that the conservation effort will be effective. For more information, see chapter 9, *Resources for INRMP Implementation—A Handbook for the DoD Natural Resources Manager,* updated 2005, available at www.denix.osd.mil/inrmp.

are not defined, and there was a concern that such phrases would be open to varying interpretations by the local and regional FWS offices.

The study found that most current INRMPs would need to be updated to some extent to explicitly address the three FWS criteria. However, most natural resources managers believed that the current, on-the-ground management for threatened and endangered species would satisfy the intent of the FWS criteria, even though it might not be reflected in the current INRMP documents.

BEST PRACTICE: OPEN COMMUNICATION AND INVOLVEMENT WITH FWS

One INRMP included in the study did receive resoundingly positive support from FWS for threatened and endangered species management. The Patrick AFB INRMP was described as "rock solid" concerning threatened and endangered species management, and the FWS representatives stated that designating critical habitat would afford no better protection to the species than already occurs with implementation of the current INRMP—that is to say, the current INRMP for Patrick AFB would likely be accepted by FWS as a substitute for critical habitat designation. As a comment on communications with key stakeholders, Patrick AFB has very open and positive communications with the FWS points of contact. The installation has a long history of consultation with the FWS on sea turtles and scrub jays that predates the INRMP. The installation maintains regular communication with the FWS local office and holds round-table meetings with them several times a year. We were told by the FWS representative that recently, when a new commanding general was appointed to Patrick AFB, the FWS representative was invited to meet with him. This type of cooperation demonstrates the respect between the two organizations and contributes significantly to providing overall positive communications. Although not explicitly stated as a FWS criterion, positive and open communications and trust between FWS and an installation are an obvious prerequisite of having an INRMP substitute for critical habitat designation.

A potential area of concern voiced by some installation managers was regarding whether there would be FWS staff available to work with installations that may be interested in using the INRMP as a substitute for critical habitat. Just as there is a lack of technical support from FWS for general INRMP implementation, several managers indicated that it is equally difficult to get support for consultation on threatened and endangered species matters. Staff shortages and staff turnover in FWS can extend consultation times considerably. Some installation managers are not keen to fully incorporate ESA biological opinions into the INRMP because, in many cases, it took several years to negotiate the biological opinions in the first place. Also, there is a concern that the FWS staff who typically work with installations on threatened and endangered management may not be familiar with the INRMP process. This latter point was confirmed during the study in a few situations where the local FWS staff was unfamiliar with the designated FWS Regional Sikes Act Coordinator.

Other areas raised as potential issues concerning the use of INRMP as substitutes for critical habitat were the outdated recovery plans or the lack of recovery plans, lack of comparative data, lack of analysis of compliance monitoring data, and inability of installations to assess progress towards species recovery. These areas may become increasingly important as the FWS and installations try to determine whether a given INRMP meets the three FWS criteria. It is not clear that the FWS, as it is currently required to operate under the ESA, will be able to address these issues due to a lack of staff and funds. So, although natural resources managers are supportive of integrating threatened and endangered species management wholly into the INRMP process, it is not clear that many installations will opt to do this because of the perceived difficulties in negotiating with FWS.

Protecting Species at Risk

This area of interest concerns the level of protection afforded by the INRMP process for species at risk—those species protected at the state level, but for which there is no legal requirement for federal facilities to protect. Again, communication plays an important role in how successful installations are in this area.

Not all headquarters natural resources offices encourage pursuit of management for state-listed species. This is because there is no legal requirement to manage for these species, and priority is given to meeting compliance requirements due to the scarcity of funds. Also, there was some question about the reliability of the data used to compile state-protected species lists, and in some cases, a state's emphasis is more on recreation, hunting, and fishing than on protected species management.

BEST PRACTICE: ACTIVE PARTNERING WITH STATE AGENCIES

Although support from some headquarters may be lacking and there is no legal obligation equivalent to the ESA for state-listed protected species, most installations conduct some level of management for these species. Because of current funding priorities and the lack of a clear legal driver, project support for species at risk has become considerably more difficult. Installations that have overcome these difficulties and that are most successful in this area have done so by incorporating species-at-risk management into the overall management activities. Also, in almost every case, those installations that manage for state-listed species are those that are active partners with their respective states and participate in joint initiatives.

Of the installations visited in the study, Fort Custer Training Center has the most explicit discussion of managing for state-protected species. As a National Guard facility, Fort Custer has close ties with the State of Michigan and is managed by the Michigan Department of Military and Veteran Affairs. In general, National Guard installations have traditionally adhered more closely to meeting state environmental requirements, even though they may not have a legal requirement to comply. In the area of species at risk, the National Guard Bureau has for some time emphasized the importance of including management for state-listed protected species, as well as for federally listed threatened and endangered species.

Fort Custer has no recorded federally listed threatened and endangered. However, it is has 25 Michigan-listed threatened, endangered, and special concern plant and animal species. The installation worked closely with representatives of the Michigan Natural Features Inventory and the Michigan Department of Natural Resources in developing INRMP management prescriptions for these species. Although there were negative survey findings for ESA-listed species, the FWS requested the installation include actions concerning four federally listed and candidate species. Detailed goals and objectives for both state-listed and federally listed species were developed and included in the installation's comprehensive ecosystem management approach. To assist soldiers training in the field, Fort Custer has developed as part of the Environmental Awareness of the ITAM program several informative publications that outline environmental and natural resources issues—a Soldier's Field Card, Training Area Notebooks, and Eastern Massasauga Rattlesnake pamphlets.

Although Camp Lejeune does not conduct specific management for its state-listed species, it is recognized by the state Natural Heritage group as being very supportive of state initiatives. Camp Lejeune has achieved this not by making species at risk a special case, but rather by including them in the installation's baseline surveys, including them as part of basic management actions (establishing protection areas), by partnering with the state on a local initiatives, and by developing and maintaining an excellent working relationship with the state Natural Heritage Program. Installation

natural resources managers meet with the state Natural Heritage staff every few months and exchange data and information. The installation's success with state-listed species is because these species are being managed as part of the installation's overall ecosystem management and are benefiting from a range of management activities, rather than species-specific management actions.

BEST PRACTICE: CONDUCT ECOSYSTEM MANAGEMENT RATHER THAN EMPHASIZING SINGLE SPECIES MANAGEMENT

Installations that demonstrated success in managing for species at risk tend to be those that are conducting ecosystem management and that have good working relations with their state resource agencies. Many are partners in local and regional initiatives, and managing for state-listed species is conducted as a matter of course, rather than as a special circumstance. Installations that do not manage for state-listed species may run the risk of having difficulty in coordinating INRMP updates and in getting state concurrence on the plan. Just as with overall stakeholder communications, it is important to establish and maintain some level of communication and not to wait to coordinate with the state only when input is needed for INRMP updating and approval. Most state offices understand the limitations of the installation's natural resources management and are pleased with any activities conducted by installations that may assist the states' overall management. Even in cases where an installation may not have the resources to conduct management for species at risk, it is still important to meet with and consult with the state agencies. Also, installations with best practices in the area of species-at-risk management are those which are not driven by threatened and endangered management for single species. Again, their emphasis on an ecosystem management approach seems to allow a better balance of the management activities.

INRMP Adaptability and Flexibility

BEST PRACTICE: REGULARLY ADDRESS AND SCHEDULE INRMP MAINTENANCE, REVIEWS, AND UPDATES

This area of interest looked for information as to how installations are maintaining their INRMPs and how they go about adjusting to new information, new mission requirements, or incomplete or failed plan components. Of the installations included in the study, very few conduct activities related to maintaining and updating the INRMP. Two of the nine installations included in the study conduct some level of INRMP maintenance or updating on a regular basis. Both installations, Fort Custer Training Center and MCB Camp Pendleton, specifically address INRMP maintenance and updating in their INRMP documents, and both provide specific schedules for the review and update. Fort Custer conducts an annual review of the INRMP project monitoring findings in February of each year and completes a report by March of each year on the INRMP revisions that may be needed. Reviewers are sent formal invitation letters requesting their participation. Fort Custer's review meetings include both installation staff and representatives from the state and FWS.

MCB Camp Pendleton conducts reviews and updates of the INRMP on a semiannual basis. The reviews examine a range of issues including determining progress, identifying additional needs, and revising project schedules and priorities. Representatives of the California Department of Fish and Game and the FWS are included in the reviews. Progress on specific projects is tracked, and updates to an internal version of the INRMP are made on a continuing basis by a dedicated staff person.

Best practices in this area involve the installation establishing a system for the regular review and update of the INRMP. Installations that have set times and intervals for INRMP review and update are those that will have the ability to adapt to new or changing conditions. Unfortunately, most installations have not established procedures for this, and so they rely on individual managers' note-keeping abilities and memories to retain information until the next major INRMP update.

Organizational Effectiveness

This area of interest looked at the interaction or need for interaction between the installations and headquarters offices. In general, this area seemed not to be a major issue for installation staff. Overall, the natural resources managers did not feel a need to contact or work with higher headquarters offices, and in most cases, there did not appear to be much interaction between the installation staff and headquarters offices. The two Marine Corps installations included in the study did state that they had immediate access to the natural resources headquarters staff and that they could contact them easily and directly about any issues. The straightforward organizational structure of the Marine Corps command and headquarters natural resources groups makes this easy to accomplish. There is open and frequent communication between installation and headquarters natural resources offices in the Marine Corps, and this also contributes to positive and effective communication. Complex organizational structures and recurrent reorganizations are not conducive to positive information flow and communication.

Some managers did express a lack of support and guidance from headquarters and from DoD on overall INRMP implementation. These comments were almost always related to difficulties in funding INRMP projects and to the fact that INRMP projects are not considered to be compliance driven. Natural resources and environmental staff at the intermediate and headquarters offices also expressed this same frustration with the difficulty in getting INRMP project funding. There was a general sense that the DoD was failing to support the INRMP initiative that it had instigated and that DoD was not taking action to protect the INRMP process from disruption by other parts of the services' organizations.

Updating the INRMP Document

The overall purpose of this part of the study was to determine how effective installation INRMP documents are in relating an installation's natural resources management practices and to identify best practices for the published INRMP document. For the many groups and individuals that may interact with an installation or seek information about an installation's natural resources, the written INRMP document is the main and often only source of information. A reader may judge the quality of an installation's natural resources management by what is documented in the INRMP. A poorly written and poorly organized INRMP is likely to produce an unfavorable view of an installation's management, even if the management on the ground is good. Conversely, a well-written and - presented INRMP may indicate to a reader correspondingly good natural resources management on the ground—when in fact there may be poor management. However, this is less likely because the effort involved in preparing a good INRMP will more often be indicative of good management practices and successful implementation on the ground.

The INRMP document is the means by which groups and individuals can learn about an installation's natural resources and land management. The number and range of groups and organizations that may at some point refer to an installation INRMP is great and includes local and regional FWS offices, state fish and wildlife agencies, installation neighbors and stakeholders, installation trainers and range managers, the installation public affairs office, military command and headquarters staff, educational institutions, and the general public. Although most INRMPs are not currently accessible for reference and review, all INRMPs being developed or updated must be made available to the public for comment. This availability is usually achieved by following a NEPA approach where a draft INRMP or updated INRMP is announced through the local media and copies of the document are placed in locations where the public will have access.

Also, since its introduction in 1994[17], the INRMP has continued to gain importance as a legislatively required document. The SAIA included several requirements specific to INRMPs. The SAIA formally substituted the INRMP for the previous fish and wildlife cooperative plan, specified the required elements of an INRMP, mandated the preparation and implementation of plans, required INRMPs to be reviewed regularly and updated no less than every five years, required the cooperative preparation of the INRMPs with the FWS and the state fish and wildlife agencies, and required that the public be given the opportunity to comment on the plans. However, the most key recent legal issue is that the INRMP may be used in some cases as a substitute for critical habitat designation under the ESA. The National Defense Authorization Act for Fiscal Year 2004 amended the ESA by adding a section that prohibits the FWS from designating as critical habitat any DoD-owned or -controlled lands that are subject to an INRMP that has been determined to provide a benefit to the listed species. Although not all installations will have an interest or need to request their INRMP be used as a substitute for critical habitat designation, there will be a considerably increased scrutiny of installation INRMPs, especially in cases where they are proposed as substitutes for the designation.

Again, it must be pointed out that the review of the 20 stand-alone INRMP documents was not intended to provide statistically defensible data. Rather, it was intended to provide a general overview of the effectiveness of the written INRMPs: the content was reviewed to determine if the main areas of interest to DoD, and presumably to the review agencies, stakeholders, and public, were addressed and clearly presented. Features of INRMPs that received high clarity rankings (7 or greater) were identified and are described below, as they may be applicable to other installations as they move forward with the required INRMP updates. Similarly, it must be restated that an INRMP that reads well, is complete, and gets a high clarity rank does not necessarily reflect how it is implemented at the field level.

An objective of assigning a clarity ranking was to identify in a semiquantitative, or at least not purely subjective way, those aspects of INRMPs where there is potentially most room for improvement and to identify specific INRMPs that presented overall categories and criteria in a positive light so that those best practices could be identified and described.

The following general statements can be made about the INRMP review conducted as part of this study. The statements are made strictly at their face value. There is no attempt to explain why a particular category, criterion, service, or installation has a better or poorer INRMP score. However, the best practices employed by installations having reasonably good clarity rankings are given below.

Six general categories with a total of 25 criteria were examined for the 20 INRMPs (see appendix B for the categories and criteria). After reading each INRMP, clarity rankings ranging from 10 to 0 were assigned to the criteria according to how well the topics were fully addressed and clearly presented (rank of 10) or if they were not addressed in the document (rank of 0). The INRMP document review showed that the INRMPs encompassed the full range of content and thoroughness of treating the subject matter and showed that there is a great variation in the content and quality of the INRMPs. A clarity rank of 7 for a criterion is regarded as a reasonable and attainable level. The more INRMP criteria with a ranking 7 or higher contained within an INRMP would indicate a more effective

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[17] In 1994 the Deputy Under Secretary of Defense issued the Memorandum on Implementation of Ecosystem Management in the DoD (available at http://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Statements/note3.html) which identified the INRMP as the tool to implement ecosystem management. Installation INRMPs became legislatively required in 1997 with the passage of the Sikes Act Improvement Act (available at http://thomas.loc.gov/home/thomas2.html or http://www4.law.cornell.edu/uscode/16/670a.html).

INRMP document. In only 4 of the 20 installation INRMPs reviewed were 20 or more of the criteria considered to have been reasonably covered (rank of 7 or more); 5 INRMPs had between 15 and 19 criteria reasonably covered; 6 INRMPs had only between 11 and 14 criteria reasonably covered; and 3 INRMPs had 8 or fewer of the 25 criteria reasonably covered.

The category that was best addressed in the INRMP documents was Adaptive Management, Monitoring, and Ecosystem Health. It is interesting to note that interview information gathered during the site visits indicated that these areas of INRMP implementation were considered by the natural resources staff to not be very well developed and that monitoring was a particular area that was felt to be weak and would be tackled in the next INRMP update. This difference between the written INRMP and what is in fact practiced in the field may indicate that it is not so difficult to write about ecosystem management, adaptive management, and monitoring but it is quite a different situation when it comes to practicing them in real world situations.

The category that was most poorly addressed was Funding, Projects, and Compliance, with all but 3 installations treating this topic at a less than reasonable level (that is, clarity ranking of less than 7). Within this category, the criterion on tracking funded projects and on dealing with funded projects that could not be implemented was not well addressed, with several installations not treating the issue at all in the INRMP. The two installations that addressed this topically quite well did so by having established installation groups review implementation specifically to identify any deviation from the plans. There was a slight improvement in clarity for this topic for INRMPs written by contractors versus those written in-house, and overall, INRMPs written by contractors ranked slightly higher than those written in-house.

When dealing with the issue of input from stakeholders, the INRMP document review grouped stakeholders into internal and external groups. Internal stakeholders are primarily the trainers and operators, and the external stakeholders are primarily the FWS and states but may also include other groups. There was not much difference overall between how the INRMPs dealt with external and internal stakeholders, and both were considered reasonable with clarity rankings just less than 7. However, much of this ranking was because of the contribution from the Air Force INRMPs, which had rankings above 8 for both external and internal stakeholder coordination.

On the whole, INRMPs dealt reasonably well with the topic of threatened and endangered and state-listed species. However, one installation that is known to have significant threatened and endangered issues ranked very low for this category. Concerning the treatment of state-listed protected species (species of concern or rare species), the installations generally fell into two camps—those that present clear management objectives for state-listed species and those that either did not address state-listed species or that did not provide any management actions.

Although the DoD guidance encourages installations to post relevant sections on the web to facilitate review and comment, only one of the INRMPs reviewed are available through the internet. The MCB Camp Pendleton INRMP is available through the Web and is one of the first items to be listed using the typical search engines. However, although published on the Web as separate sections, some parts of the Pendleton INRMP and also of the MCA Miramar INRMPs are very large files and are not easily downloaded from the internet. If considering publishing an INRMP on the Web, an installation must make these documents "user friendly," otherwise the reading audience will become very frustrated with the process.

CLOSING COMMENTS AND RECOMMENDATIONS

The following are some general comments and recommendations based on findings from the study. These comments are general in nature and may not be applicable to all installations, locations, or situations. Some may be based on findings from just a few installations and INRMPs; however, they are sufficiently significant to have an impact that should be addressed by taking some action.

- Ecosystem management as implemented through the INRMP is allowing the military to maintain the training and testing lands to a level that would not be feasible without the integrated and holistic land management approach of the INRMP. Installation natural resources managers comprise a great range of experience and knowledge that they are applying to their particular installations. However, due to its relatively short history, there are still few examples of the application of ecosystem management to day-to-day field situations. It is recommended that there be training opportunities for natural resources managers that would assist them in INRMP implementation. Specifically, training should focus on developing INRMP goals and objectives and in designing and implementing monitoring programs. It is important to not only offer this training but also to allow natural resources managers the time and funds to attend such training.

- In balancing installation priorities, projects that comprise an INRMP are not being given the necessary level of support and funding on the basis of a lack of legal drivers. However, this is a shortsighted approach that can directly impact military training and testing, especially with the increased focus on the INRMP as a substitute for critical habitat designation under the ESA. The services should move quickly to address this issue, as a lack of funding for overall INRMP implementation may adversely impact requests by individual installations to use the INRMP as a substitute.

- In the FWS, there is a range of levels of interaction with military installations. In most cases, the installations would like to have an increased level of interaction with the local FWS offices. The FWS staff is unable to meet installation requests for a variety of reasons, but many are based on a lack of funds and staff. In some cases, the individual FWS offices did not have a good understanding of their role in assisting military installations. Most interaction with installations is related to ESA compliance, and there is little work on overall INRMP implementation as mandated by the SAIA. Some FWS office staff was unaware of there being regional FWS Sikes Act coordinators. It is recommended that FWS provide guidance to the local and field offices on the SAIA and the type of assistance (beyond ESA) that installations may require and request. Also, it is recommended that efforts should be made to incorporate an approach focused on ecosystem management when dealing with ESA compliance on military installations.

- Interaction between the military installations and state fish and wildlife agencies seemed positive overall, although this finding is based on relatively little input from state agencies. Many are understaffed and underfunded; however, most reported that they were only too pleased when contacted by installations to work together on initiatives or to share data and information. Most interaction with state agencies is related to fish and game management. In only one or two cases was there interaction between the FWS and a state fish and wildlife agency. The development and implementation of INRMPs is one opportunity for these groups to work together. However, there was a lack of apparent coordination of initiatives between the FWS and states. Coordination and cooperation between the FWS and the state agencies is beyond the scope of installation management. Concerning ecosystem management and overall land management, however, it is recommended that these two groups should coordinate and share information and resources when feasible.

- The natural resources staff at many installations is a somewhat untapped resource for supporting the military trainers and operators. Rarely is the natural resources staff involved in advanced planning for training ranges. However, as the study demonstrates, the natural resources managers working with the trainers, can develop superior training and testing lands. It is recommended that there be more frequent and positive communications among the natural resources group and range managers and trainers.

- Many installations are active partners in local and regional initiatives. In almost all cases, installations that are active partners are more successful in INRMP implementation than those installations that do not pursue partnering. Through the assistance of partners, installations are able to conduct much more than if they operated alone. However, there is a concern of becoming overreliant on the assistance of partners. In some cases in the study, it was observed that the command structure within the installation and at headquarters was fully supportive of a partnership. However, the study found in some instances that a lack of support not only for the partnership but also for INRMP implementation was potentially jeopardizing existing partnerships by preventing contributions by the installation. A benefit of partnering is that the partners can assist each other in many ways. However, a complete and continued lack of support from an installation will cause a partnership to fail, despite all of the hard work that may have gone into developing the partnership. It is recommended that not only should installation command and headquarters support the concept of partnering, but it is equally important to support any commitments made with the partners.

Appendix A:
Interview Questions/Talking Points

REVIEW OF BEST MANAGEMENT PRACTICES TO IMPROVE THE EFFECTIVENESS OF INRMP IMPLEMENTATION

Background questions (1-4)

1. What group has the lead for INRMP implementation? Where in your organization does this group fit? Can you provide an organizational chart?

2. List the dates of all signed INRMPs and the anticipated date of the next update. List any and all component plans (i.e. endangered species management plans (Army), forest management plans, BASH plans, etc.)

3. Does the INRMP include all installation lands (ranges, training areas, cantonment area, agricultural outleases, recreational or other dedicated lands)? If not, what is included?

4. What type of organization wrote the current INRMP and overall, is it a satisfactory document?

Questions on supporting the military mission (5-9)

5. How does the INRMP support range sustainability, flight safety, etc.?

6. Do range, flight safety or other groups use the INRMP?

7. How is coordination accomplished between natural resources management and installation groups/plans such as range; flight safety; morale, welfare and recreation (MWR).

8. Is there an ITAM program? Is it fully funded?

9. Which installation staff and groups (commanders, trainers, range managers, etc.) provide support and/or input on INRMP projects? When is support provided – only when specifically requested or for specific projects; throughout day to day operations.

Questions on ensuring ecosystem health (10-13)

10. How is ecosystem health determined?

11. How are INRMP goals and objectives developed? Are INRMP projects linked directly to INRMP goals and objectives?

12. Does the INRMP include goals and objectives for ecosystem health?

a. Are these goals and objectives compatible with the range management and training plans and vice versa?

b. Are there short-term and/or long-term conflicts between the INRMP and other plans?

13. How effective is the INRMP in providing suitable landscapes for military activities?

Questions on funding, project completion, and compliance requirements (14-20)

14. What is your role in the budgeting process (Program Objectives Memorandum - POM)?

15. How/where are projects identified for funding (i.e. are all projects listed in the INRMP carried through to the Environmental Program Requirements Module (EPRM))?

16. Are all INRMP projects programmed regardless of funding potential? Are all INRMP projects designated a funding class (Class 0 – Class III)? Is the funding source identified (e.g. O&M, Legacy, SERDP, forestry reserve account, hunting and fishing fees, agricultural outleasing fees, others)?

17. Who holds the hunting and fishing fee account and is there an annual reporting of debits/credits? How are agricultural outleasing and forestry revenues reported to the installation?

18. Are all "must funds" fully funded, and are those funds received in a timely manner? Does the INRMP include a detailed implementation schedule?

19. How are "must fund" projects determined to be complete? Where is this documented?

20. Is there a mechanism in place to discuss problems concerning funding, contracts etc.? Do you have any suggestions on how the funding/budgeting process might be improved?

Questions on monitoring INRMP effectiveness and adaptability (21-30)

21. Is adaptive management addressed in the INRMP, service plan preparation guidelines, or other referenced guidance? And is adaptive management used in INRMP implementation?

22. Is compliance monitoring and/or reporting required by the U.S. Fish and Wildlife Service, or by state agencies? Is mitigation monitoring required for any NEPA documents? Do you have other ongoing monitoring efforts? How is monitoring funded?

23. What system is used to track implementation and progress of INRMP projects? How is a project determined to be ineffective?

24. Are INRMP projects scientifically credible? (i.e. do they follow standard sampling, survey and monitoring methods, do they conform to accepted record keeping and data collection practices?)

25. Are there monitoring protocols for data collection, data management, etc.? How are monitoring data used? Are monitoring data accessible by other groups, organizations?

26. Does the INRMP include long-term monitoring (beyond the INRMP 5 year period)?

27. Do you regularly update the INRMP? Have you considered how you will review and update the INRMP at the five-year point? Do you anticipate a need for further NEPA compliance/assessment?

28. Has the installation, major command, or service developed metrics to evaluate the effectiveness of INRMPS? (i.e., beyond those in the 10 October 2002 memo)

29. Is there sufficient support for natural resources staff to keep abreast of current issues, techniques, etc.? Are presentations at professional meetings necessary, and are they encouraged and supported?

30. How do you stay up to date on the latest technologies, survey methods, field techniques, and information management? Do you have sufficient time to attend training? Are your requests for training supported?

Questions on receiving and using stakeholder input (31-36)

31. Who are considered the main stakeholders for the INRMP?

32. The amended Sikes Act Improvement Act (1997) requires the public be given an opportunity to review INRMPs. How is this or other public outreach accomplished?

33. Do you get unsolicited input from groups and individuals interested in natural resources or land-use management? How do you respond to such input?

34. Was there stakeholder input for development and implementation of the current INRMP? If so, how was it acquired and documented? If not, have you tried to generate interest and solicit input for INRMP implementation?

35. Is support from FWS and state natural resources agencies needed, desired, or forthcoming?

36. Do the FWS and state agencies bring the installations into regional initiatives (e.g., invasive species control, wildlife disease, game management, forest pest management, wildfire control)? Are there any such regional initiatives? Does the installation participate in any DoD-led ecosystem initiatives?

Questions on meeting Endangered Species Act requirements and protecting species at risk (37-42)

The October 2002 DoD memorandum on updating INRMPs according to the SAIA presents three FWS criteria that must be met for an INRMP to be considered a substitute for future critical habitat designation (see below). Specifically, an INRMP will be considered to provide adequate special management or protection if it can show the following.

I. **The plan provides a conservation benefit to the species.** The cumulative benefits of the management activities identified in a management plan, for the length of the plan, must maintain or provide for an increase in a species' population, or the enhancement or restoration of its habitat within the area covered by the plan [i.e., those areas deemed essential to the conservation of the species]. A conservation benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, insuring against

catastrophic events, enhancing and restoring habitats, buffering protected areas, or testing and implementing new conservation strategies.

II. **The plan provides certainty that the management plan will be implemented.** Persons charged with plan implementation are capable of accomplishing the objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all the necessary authorizations or approvals. An implementation schedule (including completion dates) for the conservation effort is provided in the plan.

III. **The plan provides certainty that the conservation effort will be effective.** The following criteria will be considered when determining the effectiveness of the conservation effort. The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided; and (5) a duration sufficient to implement the plan and achieve the benefits of its goals and objectives.

37. Which of the three criteria presents the greatest challenge?

38. How do you think the current INRMP meets the three FWS criteria? How would the INRMP have to be updated to meet the criteria? Does the natural resources staff have sufficient professional and technical experience and expertise to be "capable of accomplishing the objectives of the management plan…"(see II above)?

39. Does the INRMP include all T&E management, or are there other stand-alone documents (e.g., Endangered Species Management Plan, agreements)?

40. What level of communication/coordination do you have with the regional or field offices of FWS? Does the agency differentiate between INRMP/Sikes Act issues and Endangered Species Act issues?

41. What level of communication do you have with state fish and wildlife agencies? Is the communication related to overall INRMP implementation, or to a specific issue such as protected species, game management etc.? How are projects for state listed species funded?

42. Concerning T&E species, are the priorities of FWS and the state fish and game agencies compatible, or do they lead to conflicts for installation natural resources management? How about general natural resources management priorities – do both groups have compatible priorities?

Questions on organizational effectiveness (43-48)

43. Is there consistent support/funding for INRMPs or do organizational changes impact funding?

44. What role does higher HQ play? Is the HQ role limited to natural resources management (what about contracts, programming, range/training)? Is this the most effective type of involvement?

45. What issues need the support and/or input of higher headquarters natural resources staff? Do you have access to higher HQ staff when necessary?

46. Do you have enough support to be effective? What additional support is needed (staff, equipment, authorizations)?

47. Are there impediments to implementing INRMP projects? (e.g. insufficient funding, staff retention, few job openings, lack of training, lack of or poor administrative contract support, or lack of equipment)

48. Overall, what do you think about the INRMP process? (i.e. do you see it as a benefit or a hindrance?)

Appendix B:
Categories and Criteria
for the INRMP Document Review

Military Mission and Organization

- Discussion of projects to proactively provide suitable landscapes for military missions

- Specific plans/activities discussed within the INRMP to prevent a net loss to the military mission

- Consideration of projects' affects on the military mission

- Organizational chart or explanation of where the Environmental Branch falls within the hierarchy

- List of most recent guidance, legislation, and policy

- INRMP support and coordination from/with the branches and headquarters

Funding, Projects and Compliance

- Discussion of funding process including project class number identification

- Additional sources of funding – what they are and how they are allocated

- Specific project descriptions with dollars spent, time of completion, and direct association to the goal and objective the project meets

- Discussion of tracking funded projects throughout implementation and protocol for funded projects unable to be implemented

Adaptive Management, Monitoring and Ecosystem Health

- INRMP discussion of any or all of these topics (adaptive management, monitoring, ecosystem health)

- INRMP specifically addresses these items when implementing projects

- Clearly stated goals and objectives

- Correlation between projects and how they satisfy goals and objectives

- Monitoring – specifics of how and when

- Impacts of monitoring on management changes

Coordination with Concerned Groups – Internal Stakeholders

- INRMP stages of when there is stakeholder group involvement (development, implementation, and/or updates)

- Coordination between branches (training, transportation, real estate, range management, flight safety, forest management, etc.)

- Addressing conflicts and integration

Coordination with Concerned Groups – External Stakeholders

- INRMP stages of when there is stakeholder group involvement (development, implementation, and/or updates)
- Coordination with e.g., FWS, The Nature Conservancy, local groups, rod and gun groups
- Addressing conflicts and integration

Threatened and Endangered Species

- Coordination with the US Fish and Wildlife Service, state, and local stakeholders
- Clear management for state listed species
- Integration and use issues between INRMP (environmental) and other branches